

What is claimed is:

1. A knowledge database comprising:

a plurality of phrase objects having phrases included in natural language information as object values; and

relations between the phrase objects, the relations having values expressing the relations between the phrase objects quantitatively as relation values.

2. A knowledge database comprising:

a plurality of objects having any of DNA sequences and protein sequences as object values; and

relations between the objects, the relations having values obtained by any of homology calculation and experimental measurement for any of relations between the DNA sequences and relations between the protein sequences to be expressed quantitatively as relation values.

3. A knowledge database comprising:

a plurality of objects; and

relations between the objects,

wherein the objects include any of DNA sequence objects having DNA sequences as object values and protein sequence objects having protein sequences as object values, and phrase objects having phrases included in natural language information related to any of the DNA sequences and the protein sequences as object values, and

any of relations between the DNA sequence objects and the phrase objects and relations between the protein sequence objects and the phrase objects have relation values previously defined.

4. A knowledge database comprising:

a plurality of objects having images as object values; and

relations between the objects, the relations having values expressing the relations between the objects quantitatively as relation values.

5. A knowledge database comprising:

a plurality of objects; and

relations between the objects,

wherein the objects include image objects having images as object values and phrase objects having phrases included in natural language information related to the images as object values, and

relations between the image objects and the phrase objects have relation values previously defined.

6. A knowledge database comprising:

a plurality of objects; and
relations between the objects,

wherein the objects include phrase objects having phrases including terms for use in a medical field and/or a biological field as object values, and

the relations have values expressing the relations between the phrase objects quantitatively as relation values.

7. The knowledge database according to claim 6,

wherein a synonym object dictionary is provided, the synonym object dictionary registering a plurality of objects to be regarded as a same object therewith as a synonym object group.

8. The knowledge database according to claim 6,

wherein the objects include any of DNA sequence objects having DNA sequences as object values, protein sequence objects having protein sequences as object values and image objects having images as object values, and any of relations between the DNA sequence objects and the phrase objects, relations between the protein sequence objects and the phrase objects, and relations between the image objects and the phrase objects have relation values previously defined.

9. The knowledge database according to claim 8,

wherein a synonym object dictionary is provided, the synonym object dictionary registering any of a plurality of DNA sequence objects having highly homologous DNA sequences as object values and protein sequence objects having highly homologous protein sequences as object values therewith as a same object group.

10. The knowledge database according to claim 1,

wherein the phrase objects have phrases in knowledge expressed by a natural language as object values, the knowledge expressed by a natural language being lingualized knowledge, and have values obtained by quantifying frequencies of existence of the respective phrases being close to each other in the lingualized knowledge as relation values of relations between the corresponding phrase objects.

11. The knowledge database according to claim 6,

wherein the phrase objects have phrases in knowledge expressed by a natural language as object values, the knowledge expressed by a natural language being lingualized

knowledge, and have values obtained by quantifying frequencies of existence of the respective phrases being close to each other in the lingualized knowledge as relation values of relations between the corresponding phrase objects.

12. The knowledge database according to claim 1,

wherein the phrase objects have phrases included in an index of a book as object values, and have a value obtained by quantifying a frequency of existence of two phrases being on any of a same page and a same paragraph of the book as a relation value of a relation between the corresponding two phrase objects.

13. The knowledge database according to claim 6,

wherein the phrase objects have phrases included in an index of a book as object values, and have a value obtained by quantifying a frequency of existence of two phrases being on any of a same page and a same paragraph of the book as a relation value of a relation between the corresponding two phrase objects.

14. The knowledge database according to claim 1,

wherein the relations between the phrase objects have, as relation values, values obtained by quantifying similarities of patterns in existence of the phrases in knowledge units expressed by a natural language, the similarities of patterns in existence being existing profiles.

15. The knowledge database according to claim 6,

wherein the relations between the phrase objects have, as relation values, values obtained by quantifying similarities of patterns in existence of the phrases in knowledge units expressed by a natural language, the similarities of patterns in existence being existing profiles.

16. A method for displaying objects and relations, comprising the steps of:

extracting objects related to an object corresponding to one or a plurality of keywords from a knowledge database based on relations between the objects, the object corresponding to the keywords being a query object, and the knowledge database including the objects having phrases including terms for use in a medical field and/or a biological field as object values and the relations between the objects, the relations having values expressing the relations between the objects quantitatively as relation values; and

displaying the query object and the extracted objects together with the relations there between.

17. The method according to claim 16,

wherein the query object is selected by inputting or searching the object values, and the selected query object, the extracted objects and the relations there between are displayed on a list or displayed graphically.
18. The method according to claim 16,

wherein objects having strong relations with the query object are obtained hierarchically, and the query object, the hierarchically obtained objects and relations there between are displayed on a list or displayed graphically.
19. A method for constructing a knowledge database, comprising the steps of:
 - extracting phrases used in expression of knowledge of a medical field and/or a biological field from the knowledge expressed by a natural language, the knowledge expressed by the natural language being lingualized knowledge;
 - generating objects having the phrases as object values;
 - generating relations between the objects, the relations having values expressing the relations between the objects quantitatively as relations values; and
 - accumulating the generated objects and the relations between the objects.
20. The method for constructing a knowledge database according to claim 19,

wherein the lingualized knowledge is decomposed into sentences by previously prepared sentence-separating letter strings, each being composed of one letter or a plurality of letters, the sentences are decomposed into phrases by previously prepared phrase-separating letter strings, each being composed of one letter or a plurality of letters, and the phrases obtained are set as the object values, and a frequency of existence of two phrases being close to each other in the lingualized knowledge is set as a relation value of a relation between the corresponding two phrase objects.
21. The method for constructing a knowledge database according to claim 19,

wherein an index of a book, a table of contents of a book, a title of an academic treatise, a body text of a book, a body text of an academic treatise and/or a body text of a Web page are used as the lingualized knowledge.
22. The method for constructing a knowledge database according to claim 20,

wherein an index of a book, a table of contents of a book, a title of an academic treatise, a body text of a book, a body text of an academic treatise and/or a body text of a Web page are used as the lingualized knowledge.

23. The method for constructing a knowledge database according to claim 19,
wherein phrases included in the index of the book are used as master data of phrase objects, and a frequency of existence of the two phrases being on a same page of the book is set as a relation value of a relation between the corresponding two objects.
24. The method for constructing a knowledge database according to claim 19,
wherein previously designated optional phrases are used as master data of phrase objects, and a frequency of existence of the two phrases being closer to each other in the lingualized knowledge is set as a relation value of a relation between the corresponding two objects.
25. The method for constructing a knowledge database according to claim 19,
wherein academic treatises are used as the lingualized knowledge, information including titles and/or body texts of the academic treatises is periodically acquired through a network, phrase objects and relations are extracted from the acquired information, and the knowledge database is updated.
26. The method for constructing a knowledge database according to claim 19,
wherein a plurality of objects to be regarded as a same object and relations related thereto are merged.
27. A method for constructing a knowledge database, comprising the steps of:
 - extracting DNA sequences from information including DNA sequences;
 - generating DNA sequence objects having the DNA sequence as object values;
 - generating a relation between two DNA sequence objects, the relation having, as a relation value, a quantitative value obtained by any of homology calculation and experimental measurement for a relation between the corresponding two DNA sequence; and
 - accumulating the generated DNA sequence objects and the generated relation between the DNA sequence objects.
28. The method for constructing a knowledge database according to claim 27,
wherein phrases included in natural language information related to the DNA sequences are extracted, objects having the extracted phrases as the object values are generated, and relations having defined relation values with the DNA sequence objects corresponding to phrase objects are set.
29. The method for constructing a knowledge database according to claim 28,
wherein information including the DNA sequences and natural language information related thereto is periodically acquired through a network, the DNA sequence objects, the

phrase objects and the relations are extracted from the acquired information, and the knowledge database is updated.

30. The method for constructing a knowledge database according to claim 27,
wherein a plurality of the DNA sequence objects having highly homologous DNA sequences as object values are regarded as a same object, and the plurality of DNA sequence objects regarded as the same object and relations related thereto are merged.

31. A method for generating a knowledge database, comprising the steps of:

performing an operation between first and second databases, each database accumulating a plurality of objects having, as object values, phrases expressed by a natural language, and relation values between the plurality of objects, the relations having, as relation values, values expressing relations between the objects quantitatively; and

generating a third knowledge database.

32. A method for displaying a graph, comprising the step of:

displaying a graph for comparing differences between relation values of focused relations in the first and second knowledge databases by use of the first and second databases, each database accumulating a plurality of objects having, as object values, phrases expressed by a natural language, and relation values between the plurality of objects, the relations having, as relation values, values expressing relations between the objects quantitatively.

33. The method according to claim 31,

wherein the relation values of the relations between the phrase objects included in each knowledge database are standardized between the plurality of knowledge databases.

34. The method according to claim 32,

wherein the relation values of the relations between the phrase objects included in each knowledge database are standardized between the plurality of knowledge databases.